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development and heredity. The fifth chapter, dealing with the "Control of heredity: eugenics," is a somewhat conventional treatment of an important subject. The sixth chapter, entitled "Genetics and ethics," has been commented upon previously.

A useful bibliography, glossary, and index complete the volume, which, though possibly not so well adapted as some for textbook use, is, in the reviewer's opinion, probably the best presentation of genetics for the non-scientific reader.—H. H. NEWMAN.

Bacteria and plant diseases

The third volume of SMITH'S[3] *Bacteria in relation to plant diseases* continues the treatment of the vascular diseases which was begun in the second volume with a discussion of the wilt of cucurbits, the black rot of crucifers, and the yellow disease of hyacinths. In the present volume a full treatment is accorded Cobb's disease of sugar cane, Stewart's disease of sweet corn, the Grand Rapids tomato disease, the brown rot of the Solanaceae, and the wilt diseases of tobacco. These diseases have been extensively investigated by the author himself. The accounts, therefore, contain not only a complete and critical discussion of the literature, but also embody the author's own results and present his viewpoint at the time of the writing.

In addition to these diseases, to which the greater part of the volume is devoted, a number of diseases of minor importance, or such as have not been seen by the author, or whose right to be classed as bacterial diseases has not been definitely established, are considered. Among these may be mentioned several diseases of the sugar cane, some of which are probably identical with Cobb's disease, a disease of amaranths, a wilt of the peanut, a disease of orchard grass, various vascular diseases of the banana, and two diseases of the potato. The status of many of these is still obscure. That some of them, as the various diseases of the sugar cane and the many wilts of tobacco and other solanaceous plants, are not all distinct is the belief of the author, but, in accordance with his custom, each disease independently described is kept separate until its identity shall have been established.

The book may well be said to be a record of the present status of our knowledge of the diseases of which it treats. At the same time it bears internal evidence in the many changes during the making that this status is rapidly shifting. By bringing together and classifying the vast mass of scattered and fragmentary facts relating to the subject, the author has laid bare the gaps in our knowledge and has thus pointed the way for further research. Many gaps have been filled by the author's own work, but that much remains to be done before even the morphological and etiological phases of the subject shall have been cleared up is shown by a glance through the chapters on the brown rots of the Solanaceae and on the tobacco wilts with their confusion of diseases described from different parts of the world and attributed to various organisms. It is the great merit of the author to have contributed so largely to the field of plant bacteriology. It is an almost equal merit to have clearly pointed out the lines for future progress.—H. HASSELBRING.

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[3] SMITH, ERWIN F., Bacteria in relation to plant diseases. Vol. III. pp. viii+309. *pls. 47. figs. 138.* Washington, D.C. 1914.

MINOR NOTICES

A popular guide to mosses.—Mrs. DUNHAM[4] has undertaken to present the mosses of the northeastern states in a non-technical way, so that the amateur may recognize at least their genera without using even a hand lens. The result is a very attractive little book, whose simple language and marginal illustrations should accomplish the purpose announced. If it succeeds, it will open up to the general student a group of plants present in every flora, and usually regarded as too difficult for even a speaking acquaintance.—J. M. C.

Plant diseases.—A second edition of MASSEE'S[5] very useful manual has just appeared, 5 years after the publication of the first edition. It differs from the former edition only in containing a supplement of 16 pages, giving statements concerning 20 diseases which are not included in the body of the text, or concerning which additional information is given.—J. M. C.

NOTES FOR STUDENTS

Evolution of species in Ceylon.—WILLIS[6] has followed his recent paper on the endemic flora of Ceylon[7] by developing still further his argument against natural selection as an explanation of the geographical distribution of species. His argument is based mainly upon statistics derived from TRIMEN'S *Flora of Ceylon*, in which the species are divided into 6 classes, ranging from "very common" to "very rare." He observes that in Ceylon the endemic species are the rarest, according to the foregoing classification, while species which are widespread outside of Ceylon are commonest there also. This not only appears from a consideration of the flora as a whole, but in every family the endemic species are the rarest. It also appears that within every family the groups of species into the rarity classes are remarkably alike. WILLIS regards these phenomena as the result of some natural cause working with practically even pressure throughout the whole plant kingdom, a cause entirely unlike natural selection, which is essentially differentiating in its results. This

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[4] DUNHAM, ELIZABETH MARIE, How to know the mosses; a popular guide to the mosses of the northeastern United States. 8vo. pp. xxv+287. Boston: Houghton Mifflin Co. 1916. $1.25.

[5] MASSEE, GEORGE, Diseases of cultivated plants and trees. 8vo. pp. xii+602. *figs. 173.* New York: Macmillan. 1915.

[6] WILLIS, J. C., The evolution of species in Ceylon, with reference to the dying out of species. Ann. Botany **30**:1–23. 1916.

[7] BOT. GAZ. **61**:82. 1916.